

Koch, Kristine

From: Koch, Kristine
Sent: Tuesday, May 19, 2015 3:08 PM
To: John Toll
Cc: 'Jim McKenna (jim.mckenna@verdantllc.com)'; Jen Woronets; Suzanne Replinger; Allen, Elizabeth (allen.elizabeth@epa.gov)
Subject: RE: calculation workbook for the updated congener bioaccumulation models

Thanks. We'll look these over and let you know if we have any questions.

Regards,

Kristine Koch
Remedial Project Manager
USEPA, Office of Environmental Cleanup

U. S. Environmental Protection Agency
Region 10
1200 Sixth Avenue, Suite 900, M/S ECL-122
Seattle, Washington 98101-3140

(206)553-6705
(206)553-8581 (fax)
1-800-424-4372 extension 6705 (M-F, 8-4 Pacific Time, only)

From: John Toll [mailto:JohnT@windwardenv.com]
Sent: Tuesday, May 19, 2015 3:06 PM
To: Koch, Kristine
Cc: 'Jim McKenna (jim.mckenna@verdantllc.com)'; Jen Woronets; Suzanne Replinger
Subject: calculation workbook for the updated congener bioaccumulation models

Kristine - Attached please find the calculation workbook for the updated congener bioaccumulation models. The workbook contains three tabs. The first tab is the PRG calculation worksheet. It has the same structure as the PRG calculation spreadsheet from last August that you are familiar with. The second tab provides a summary of the calibrated chemical-specific parameter values, and a model performance statistic (the species predictive accuracy factor or SPAF). The third tab is interesting in that it shows that for the two dioxin congeners modeled, a relatively high fraction of total exposure came from dioxin dissolved in the water column. That prompted us to take a closer look. We found that non-detects in the dissolved water fraction were high. 2,3,7,8-TCDD was only detected in dissolved water in one out of 26 samples (from the low flow stormwater event), meaning that the water concentration estimate used to calibrate the model is based primarily on non-detects. 1,2,3,7,8-PCDD was detected in seven out of 26 samples. Further analysis revealed that using 1/2 DL water concentration estimates for these dioxin congeners gave water concentration estimates that were higher than one would expect given the sediment SWACs. So, we had water contributing more than expected to fish tissue congener concentrations for the two dioxin congeners, and water concentration estimates based on 1/2 DL that were higher than expected given the SWACs. Because of this we did a sensitivity analysis using a different method for estimating water concentrations for the two dioxin congeners. The second method used one-half of the lowest detection limit from all the water sampling events as the replacement value for all the ND samples, and it excluded the low flow stormwater sample on the possibility that this event might be an outlier, or that events such as the low flow stormwater event samples might occur relatively infrequently (in which case they'd be overrepresented in the data set). The calibration results from the sensitivity run are presented on the second tab. The calibrations performed equally well for the two sets of assumptions, but the PRGs are likely to be somewhat sensitive to how the uncertainty about dissolved dioxin concentrations in the water column is handled. The PRG calculation worksheet (first tab) will calculate the dioxin congener PRGs both ways once you enter your target tissue concentrations.

We are working now on the revisions that you've asked us to make to the bioaccumulation modeling report. If you have any questions about the calculation workbook, please feel free to contact me through Jim McKenna.

John

John Toll, Ph.D.
Partner, Windward Environmental LLC
200 West Mercer Street, Suite 401 | Seattle, WA 98119
206.812.5433 (o) | 206.913.3292 (c)
john.toll@windwardenv.com | www.windwardenv.com